

## **Historic, Archive Document**

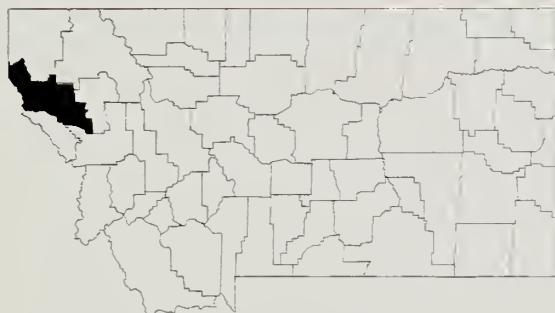
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# LITTLE BITTERROOT RIVER TIMBER BRIDGE, Sanders County, Montana

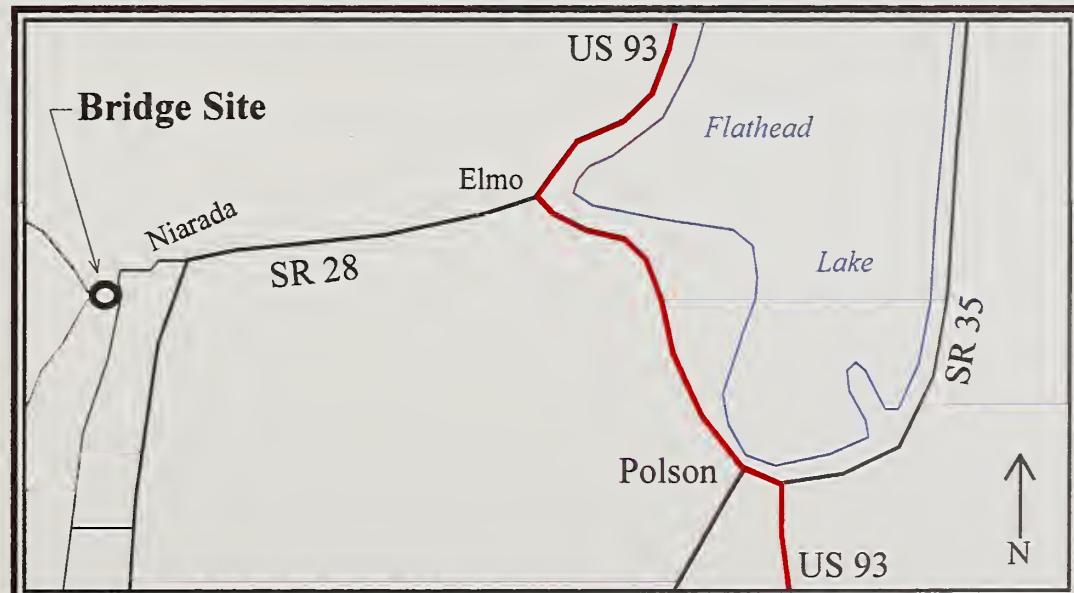
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Type: Stress-laminated sawn lumber deck  
County: Sanders County  
Owner: Sanders County, Montana  
Engineer: Merv Eriksson  
Spans over: Little Bitterroot River  
Bridge length: 24'-0"  
Roadway width: 24'-0"

**Directions:** From Elmo and the intersection of US 93 and SR 28, travel southwest on SR 28. Turn right onto County Road L0023 at Niarada. Travel two miles southwest before turning right onto L45163. The bridge site is 1/4 mile.



USDA Forest Service

The National Wood In  
Transportation Program



**GEOMETRY**

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Number of Spans: 1  
 Out-to-out length: 24'-0"  
 Center-of-bearing length: 23'-0"  
 Skew: 0 degrees  
 Number of lanes: 2  
 Out-to-out width: 26'-0"  
 Curb-to-curb width: 24'-0"  
 Superstructure square footage: 624

Design load: AASHTO HS-20  
 Dead load: 65 lbs/sq ft  
 Design by: Merv Eriksson, USDA Forest Service  
 Abutment type: Treated timber retaining wall with timber anchors and steel tie rods  
 Abutment height (bottom of footing to top of deck): 11'-4"

Total project cost: \$54,000  
 Total superstructure cost: \$28,500  
 Total superstructure cost /sq ft: \$45.67

**MATERIAL****DECK**

Material: Wood  
 Species: Coastal Douglas-fir  
 Allowable bending stress: 1505 psi  
 Sizes used: 2" x 12" x 24'-0" (laminations)  
 Quantity: 7,488 bf  
 Preservative treatment: Copper naphthenate (2% copper)  
 Prestressing: 1" diameter Dywidag bars  
 Bearing plates: 11" x 16 1/2" x 1" A36 galvanized steel  
 Anchorage plates: 4" x 6 1/2" x 1 1/4"

**BEAMS/STRINGERS (none)****GUIDERAIL POSTS (none)****CURBS**

Material: Wood  
 Species: Coastal Douglas-fir  
 Sizes used: 8" x 12" x 24'-0"  
 with 10" x 12" x 2'-4" scupper blocks

**ABUTMENTS**

Material: Wood  
 Species: Coastal Douglas-fir & Ponderosa pine (Posts, sills, caps, and braces are Coast Douglas-fir, No. 1 or better. All remaining lumber is Ponderosa pine, No. 2.)  
 Preservative treatment: Copper naphthenate (2% copper)  
 Hardware & structural steel: A36, bolts & nuts: A307 (uncoated)

**LOCAL IMPACT:** This bridge carries Sanders County Road L45163 across the Little Bitterroot River on the Flathead Indian Reservation. The bridge is used by school buses, delivery vehicles, logging trucks, cattle trucks, and agricultural equipment.

**BRIDGE PERFORMANCE:** This two lane, stress-laminated timber bridge replaced an undersized culvert. The treated timber abutments were constructed in place while the stress-laminated superstructure was fabricated on the adjacent roadway and lifted into place with a small crane.

**FUNDING SOURCES:** USDA Forest Service \$27,000; Balance of funding from Sanders County, Montana.

**LOCAL CONTACT:** Merv Eriksson  
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Information provided by Merv Eriksson, Structural Engineer, USDA Forest Service.

WIT Program Proposal Number: R01-02-89      Federal Grant Identifier: R01-02-89